CLAIMS

1. A tripod constant velocity joint comprising:

a tubular outer member for connection to a transmission shaft, said tubular outer member having a plurality of guide grooves defined in an inner wall surface thereof which are spaced from each other and extend in an axial direction of the tubular outer member;

an inner member for connection to another transmission shaft, said inner member being disposed in an opening defined in said tubular outer member;

said inner member having a plurality of trunnions (26a, 26b, 26c) projecting respectively into said guide grooves (18a, 18b, 18c);

a ring-shaped roller (30) fitted over each of said trunnions (26a, 26b, 26c) and held in contact with surfaces defining said guide grooves (18a, 18b, 18c);

a plurality of rolling elements (28) rollingly interposed between each of said trunnions (26a, 26b, 26c) and said roller (30);

said roller (30) having an inner circumferential wall surface (40);

a one-sided flange projecting radially from an axial end of said inner circumferential wall surface (40); and

a holder mounted in an opposite axial end of said inner circumferential wall surface (40) and holding said rolling elements;

wherein before said holder is mounted in said roller (30), all rolling elements (28) are inserted altogether as an annular array into said roller (30) and placed onto said inner circumferential wall surface (40) in an axial direction of said inner circumferential wall surface (40) from the axial end thereof remote from said one-sided flange, and are retained in place.

2. A constant velocity joint according to claim 1, wherein said all rolling elements (28) which are inserted into said roller (30) are held in a keystone state on said inner circumferential wall surface (40).

3. A constant velocity joint according to claim 1, wherein a radial clearance (A) is defined between said inner circumferential wall surface (40) of said roller (30) and outer circumferential surfaces of said rolling elements (28).

4. A constant velocity joint according to claim 3, wherein said radial clearance (A) is in a range from several μm to several tens of μm.

5. A constant velocity joint according to claim 1, wherein said holder comprises at least a circlip (46) or a washer (50).

6. A constant velocity joint according to claim 1, wherein said one-sided flange comprises a flange (42) integrally formed with said roller (30).

7. A constant velocity joint according to claim 1, wherein said one-sided flange is provided by a holder comprising at least a circlip (46) or a washer (50).

8. A constant velocity joint according to claim 1, wherein said holder (146) comprises a ring-shaped member secured in place by the viscosity of a lubricant (W) supplied to said inner circumferential wall surface (40).

9. A tripod constant velocity joint comprising:

a tubular outer member for connection to a transmission shaft, said tubular outer member having a plurality of guide grooves defined in an inner wall surface thereof which are spaced from each other and extend in an axial direction of the tubular outer member;

an inner member for connection to another transmission shaft, said inner member being disposed in an opening defined in said tubular outer member;

said inner member having a plurality of trunnions (26a, 26b, 26c) projecting respectively into said guide grooves (18a, 18b, 18c);

a ring-shaped roller (30) fitted over each of said trunnions (26a, 26b, 26c) and held in contact with surfaces

defining said guide grooves;

a plurality of rolling elements (28) rollingly interposed between each of said trunnions and said roller;

said roller (30) having an inner circumferential wall surface (40);

a one-sided flange projecting radially from an axial end of said inner circumferential wall surface (40); and

a holder mounted in an opposite axial end of said inner circumferential wall surface (40) and holding said rolling elements;

wherein before said holder is mounted in said roller, all rolling elements (28) excluding one are arranged as an annular array on the inner circumferential wall surface of said roller, and then the excluded rolling element (28a) is inserted into a gap (69) between two of the rolling elements arranged as the annular array in an axial direction of said inner circumferential wall surface (40) from the axial end thereof remote from said one-sided flange, and are retained in place.

10. A constant velocity joint according to claim 9, wherein said all rolling elements (28) excluding one are loaded altogether onto said inner circumferential wall surface of the roller.

11. A constant velocity joint according to claim 9, wherein said all rolling elements (28) excluding one are

loaded successively onto said inner circumferential wall surface of the roller.

12. A constant velocity joint according to claim 9, wherein after said all rolling elements are loaded onto said inner circumferential wall surface of the roller, predetermined circumferential clearances (C) are formed between adjacent rolling elements.

13. A constant velocity joint according to claim 12, wherein each of said predetermined circumferential clearances (C) is in a range from several μm to several tens of μm.

14. A constant velocity joint according to claim 9, wherein said holder comprises at least a circlip or a washer.

15. A constant velocity joint according to claim 9, wherein after said all rolling elements excluding one are loaded onto said inner circumferential wall surface, all of the rolling elements on said inner circumferential wall surface are held in a keystone state.

16. A constant velocity joint according to claim 9, wherein said one-sided flange comprises a flange integrally formed with said roller.

17. A constant velocity joint according to claim 9, wherein said one-sided flange is provided by a holder comprising at least a circlip or a washer.

18. A constant velocity joint according to claim 9, wherein said holder (146) comprises a ring-shaped member secured in place by the viscosity of a lubricant (W) supplied to said inner circumferential wall surface (40).

19. A method of manufacturing a constant velocity joint having a tubular outer member having a plurality of guide grooves defined in an inner wall surface thereof, which are spaced from each other and extend in an axial direction of the tubular outer member, a plurality of trunnions disposed in an opening defined in said tubular outer member and projecting respectively into said guide grooves, a ring-shaped roller fitted over each of said trunnions and held in contact with surfaces defining said guide grooves, a plurality of rolling elements rollingly interposed between each of said trunnions and said roller, said roller having an inner circumferential wall surface, a one-sided flange projecting radially from an axial end of said inner circumferential wall surface, and a holder mounted in an opposite axial end of said inner circumferential wall surface and holding said rolling elements, said method comprising the steps of:

before said holder is mounted in said roller (30),

arranging all rolling elements (28) as an annular array, inserting all of the rolling elements (28) altogether into said roller (30), and placing all of the rolling elements (28) onto said inner circumferential wall surface (40) in an axial direction of said inner circumferential wall surface (40) from the axial end thereof remote from said one-sided flange, with a radial clearance defined between said inner circumferential wall surface (40) and outer circumferential surfaces of said rolling elements (28); and

after said all rolling elements (28) are inserted altogether into said roller (30), installing said holder for holding said rolling elements on the opposite axial end of said inner circumferential wall surface (40) of said roller (30).

20. A method of manufacturing a constant velocity joint having a tubular outer member having a plurality of guide grooves defined in an inner wall surface thereof, which are spaced from each other and extend in an axial direction of the tubular outer member, a plurality of trunnions disposed in an opening defined in said tubular outer member and projecting respectively into said guide grooves, a ring-shaped roller fitted over each of said trunnions and held in contact with surfaces defining said guide grooves, a plurality of rolling elements rollingly interposed between each of said trunnions and said roller, said roller having an inner circumferential wall surface, a one-sided flange

projecting radially from an axial end of said inner circumferential wall surface, and a holder mounted in an opposite axial end of said inner circumferential wall surface and holding said rolling elements, said method comprising the steps of:

before said holder is mounted in said roller (30), arranging all rolling elements (28) excluding one as an annular array along said inner circumferential wall surface (40) of said roller (30), and inserting the excluded rolling element (28a) into a gap (69) between two of the rolling elements (28) arranged as the annular array in an axial direction of said inner circumferential wall surface (40) from the axial end thereof remote from said one-sided flange, with circumferential clearances defined between said inserted rolling element (28a) and adjacent rolling elements (28); and

after said all rolling elements (28) are inserted altogether into said roller (30), installing said holder for holding said rolling elements on the opposite axial end of said inner circumferential wall surface of said roller.

21. A method of manufacturing a constant velocity joint having a tubular outer member having a plurality of guide grooves defined in an inner wall surface thereof, which are spaced from each other and extend in an axial direction of the tubular outer member, a plurality of trunnions disposed in an opening defined in said tubular outer member and

projecting respectively into said guide grooves, a ring-shaped roller fitted over each of said trunnions and held in contact with surfaces defining said guide grooves, a plurality of rolling elements rollingly interposed between each of said trunnions and said roller, said roller having an inner circumferential wall surface, a one-sided flange disposed on an axial end of said inner circumferential wall surface, and a holder disposed on an opposite axial end of said inner circumferential wall surface and holding said rolling elements, said method comprising the steps of:

loading all rolling elements (28) along said inner circumferential wall surface (40) of said roller (130); and

supplying a lubricant (W) to said inner circumferential wall surface (40) to secure the holder (146) introduced along said inner circumferential wall surface (40) by the viscosity of said lubricant (W).